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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,483	09/22/2003	Takeshi Ootsuka	P/2850-86	2926

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EXAMINER

HARAN, JOHN T

ART UNIT PAPER NUMBER

1733

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/668,483

Applicant(s)

OOTSUKA ET AL.

Examiner

John T. Haran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-13 is/are pending in the application.
4a) Of the above claim(s) 1 and 2 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 3-13 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/14/05, 9/27/04.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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DETAILED ACTION

Election/Restrictions

1. The Restriction requirement mailed on 12/14/04 is withdrawn. This action acts on claims 3-13 which were elected without traverse in the election filed 9/27/04 in response to the original restriction requirement mailed on 9/2/04.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 9/27/04 and 2/14/05 have been considered by the examiner.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

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4. Claims 3-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Kuibara et al. (US 2003/0150563).

Kuibara et al discloses a substrate holding structure comprising a placement member (2) with a substrate placement surface (15) wherein the placement member has a plasma generating electrode (5), an electrostatic adhesion electrode (4) and a heating electrode (6) embedded therein. The placement member is attached to a cylindrical supporting member (7) in an airtight manner and the cylindrical supporting member is made of ceramic thermal insulation material such as aluminum nitride (paragraph 0079; Figure 1). The substrate holding structure meets all the limitations of the claims and is capable of holding a substrate during a bonding operation. Kuibara et al anticipates claims 3-5.

5. Claim 3 is rejected under 35 U.S.C. 102(a) as being anticipated by Crocker (US 2001/0050143).

Crocker discloses a substrate processing apparatus comprising a placement member (138) with a substrate placement surface (122) wherein the placement member has plasma generating and electrostatic adhesion electrodes (124, 126) embedded therein (paragraphs 0024-0025 and 0031; Figure 1). The substrate processing apparatus meets all the limitations of the claims and is capable of holding a substrate during a bonding operation. Crocker anticipates claim 3.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuibara et al. (US 2003/0150563) as applied above with respect to claims 3-5.

Regarding claim 6, Kuibara et al teach the cylindrical supporting member comprises ceramic thermal insulation material but is silent towards the types claimed, however the claimed materials are all well known and conventional ceramic thermal insulation materials. One skilled in the art would have readily appreciated using alternate conventional ceramic thermal insulation materials in the apparatus of Kuibara et al. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use alternate conventional ceramic thermal insulation materials in the apparatus of Kuibara et al.

Regarding claim 7, one skilled in the art would have readily appreciated that the claimed materials for the cylindrical supporting member are well known and conventional materials for such and are alternate expedients to the ceramic material taught in Kuibara et al. It would have been obvious to use a conventional material that is an alternate expedient for ceramic for the cylindrical supporting member in the apparatus of Kuibara et al.

Regarding claim 8, one skilled in the art would have readily appreciated that it is well known and conventional to use an O-ring or metal gasket to provide an airtight seal and it would have been obvious to use an O-ring or metal gasket in place of the bonding material in the apparatus of Kuibara et al.

8. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al (US 2003/0178474) in view of Kuibara et al. (US 2003/0150563).

Jiang et al is directed to an apparatus for bonding an electronic component to a substrate wherein the apparatus includes a bonding stage (427) for holding a substrate, a bonding tool (425) positioned above the bonding stage (427) and a chamber (405) that houses the bonding tool and bonding stage (Figure 4). Jiang et al teaches that a plasma is generated between the bonding tool and bonding stage before a substrate and component are brought together (paragraph 0040) but is silent towards the bonding stage having a plasma generating electrode and an electrostatic adhesion electrode and a ceramic cylindrical supporting member attached thereto in an airtight manner.

It is well known and conventional when plasma treating a substrate for the substrate holder to have a plasma generating electrode and an electrostatic adhesion electrode and a ceramic cylindrical supporting member attached thereto in an airtight manner, as shown for example in Kuibara et al (paragraph 0079; Figure 1). One skilled in the art would have readily appreciated using a conventional substrate holder for holding a substrate during plasma treatment. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use such a conventional

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bonding stage with a plasma generating electrode and an electrostatic adhesion electrode and a ceramic cylindrical supporting member attached thereto in an airtight manner in the apparatus of Jiang et al.

Regarding claim 10, it is well known and conventional for bonding tools to hold an electronic component using electrostatic attraction. It would have been obvious for the bonding tool to have an electrostatic adhesion mechanism, as is well known and conventional in the art in the apparatus of Jiang et al, as modified above.

Regarding claim 11, one skilled in the art would have readily appreciated having a heater electrode in the bonding tool to provide heat for bonding the chip to the substrate. One skilled in the art also would have readily appreciated that it is conventional for a plasma to be generated between two electrodes and would have appreciated having the second electrode in the bonding tool. It would have been obvious to have a heater electrode or plasma generating electrode in the bonding tool of the Jiang et al, as modified above.

Regarding claim 12, Jiang et al teaches the bonding tool applies pressure.

Regarding claim 13, it is well known and conventional for bonding tools to have an ultrasonic device for use in bonding the chip to the substrate. It would have been obvious to include such an ultrasonic device in the bonding tool of Jiang et al, as modified above.

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Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John T. Haran** whose telephone number is **(571) 272-1217**. The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


John T. Haran
Examiner
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